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EXAMINER	
HANNAHER, CONSTANTINE	

ART UNIT	PAPER NUMBER
2884	

DATE MAILED: 02/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/613,061	REN ET AL.	
	Examiner	Art Unit	
	Constantine Hannaher	2884	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 February 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-11,13-20 and 24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-11,13-20 and 24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on January 9, 2006 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1, 3, 9, 4-8, 24, 10, 11, 13, 19, 14-18, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Possin *et al.* (US006167110A) in view of Cusano (US004187427A) and Hu *et al.* (US005510622A).

With respect to independent claim 1, Possin *et al.* discloses a radiation detector (Fig. **1**) comprising a first array **22** with a first photon incident surface. Those of ordinary skill in the art at the time the invention was made would know that photons do not fall under the influence of gravity in the way that is illustrated in Fig. **2** of Possin *et al.* Cusano shows (Fig. **1**) that in a radiation detector in which an array of scintillator bodies **10** is disposed such that x rays **50** are incident on the scintillator body **10** substantially perpendicular to the optical axis of the scintillator body (Fig. **6**) it is known to optically couple each scintillator body **10** to at least two sensor elements **18** such that sensor elements **18** are separated by the scintillator bodies **10**. In view of the enhanced capture of the optical output of the scintillator bodies **10** when a detector **18** is provided at each end as specifically described by Cusano (column 4, lines 12-31), which enhanced capture would have been recognized as useful in the radiation detector of Possin *et al.* since some photons would travel upwards along axes **35** therein, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the radiation detector of Possin *et al.* to optically couple a second array **22** with a second photon incident surface at the top end of the scintillator **34** fibers such that the scintillator separated the sensor elements. Hu *et al.* shows that an offset of specifically one-half detector pitch (Fig. **3A**, column 3, lines 27-30) between two arrays **18A, 18B** in a radiation detector is superior to a plurality of arrays with no offset (Fig. **4**, see also column 1 line 55 to column 2, line 9). In view of the reduced detector pitch without smaller detector elements as suggested by Hu *et al.*, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the radiation detector of Possin *et al.* to offset a first array **22** from a second array **22** by one-half the pitch of detectors **23**. Such an offset would be normal to the incident x ray direction such that the resolution in imaging object **28** was improved (which an offset parallel to the incident x ray direction would not achieve) and would be "with respect to" an axis of the scintillator array **34**

in the radiation detector of Possin *et al.* All arrays **22** suggested in the radiation detector of Possin *et al.* would be in the "same" radiation detector.

With respect to dependent claim 3, the scintillator **34** in the radiation detector of Possin *et al.* comprises a plurality of optical fibers (column 6, lines 9-16).

With respect to dependent claim 9, the plurality of optical fibers in the radiation detector of Possin *et al.* are oriented as recited (column 6, lines 16-18).

With respect to dependent claim 4, the scintillator **334** in the radiation detector of Possin *et al.* (Fig. **3**) comprises a sheet of scintillator material (column 7, lines 22-31).

With respect to dependent claim 5, the scintillator (array) in the radiation detector of Possin *et al.* is configured as recited in view of the direction of a plurality of optical photons from scintillator **34** to the photon incident surfaces of multiple arrays **22** and in view of the additional arrays suggested by Cusano.

With respect to dependent claim 6, the arrays **22** in the radiation detector of Possin *et al.* comprise a plurality of sensor elements comprising a plurality of photosensor devices **23** (especially in view of the grouping illustrated in Fig. **7**).

With respect to dependent claim 7, the photosensor devices **23** in the radiation detector of Possin *et al.* are disposed as recited in view of the nearly identical language of column 3, lines 1-5.

With respect to dependent claim 8, the photosensor devices **23** in the radiation detector of Possin *et al.* are disposed as recited in view of the nearly identical language of column 3, lines 5-9.

With respect to dependent claim 24, see the explanation of the rejection against claim 9.

With respect to independent claim 10, Possin *et al.* discloses a radiation detector (Fig. **1**) comprising a first array **22** with a first photon incident surface. Those of ordinary skill in the art at the time the invention was made would know that photons do not fall under the influence of gravity

in the way that is illustrated in Fig. **2** of Possin *et al.* Cusano shows (Fig. **1**) that in a radiation detector in which an array of scintillator bodies **10** is disposed such that x rays **50** are incident on the scintillator body **10** substantially perpendicular to the optical axis of the scintillator body (Fig. **6**) it is known to optically couple each scintillator body **10** to at least two sensor elements **18** such that sensor elements **18** are disposed at both ends of the plurality of scintillator bodies **10**. In view of the enhanced capture of the optical output of the scintillator bodies **10** when a detector **18** is provided at each end as specifically described by Cusano (column 4, lines 12-31), which enhanced capture would have been recognized as useful in the detector of Possin *et al.* since some photons would travel upwards along axes **35** therein, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the radiation detector of Possin *et al.* to optically couple a second array **22** with a second photon incident surface at the top end of the scintillator **34** fibers such that the scintillator separated the sensor elements. Hu *et al.* shows that an offset of specifically one-half detector pitch (Fig. **3A**, column 3, lines 27-30) between two arrays **18A, 18B** in a radiation detector is superior to a plurality of arrays with no offset (Fig. **4**, see also column 1 line 55 to column 2, line 9). In view of the reduced detector pitch without smaller detector elements as suggested by Hu *et al.*, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the radiation detector of Possin *et al.* to offset a first array **22** from a second array **22** by one-half the pitch of detectors **23**. Such an offset would be normal to the incident x ray direction such that the resolution in imaging object **28** was improved (which an offset parallel to the incident x ray direction would not achieve) and would be "with respect to" an axis of the scintillator array **34** in the radiation detector of Possin *et al.* The radiation detector of Possin *et al.* would further comprise two arrays **22** which would comprise a plurality of sensor elements comprising a plurality of photosensor devices **23** (especially in view of the grouping illustrated in Fig. **7**), and a scintillator

(array) **34** extending from the first photon incident surface to the second incident surface (as is apparent from the view since the extent of scintillator **34** encompasses multiple arrays **22**), configured as recited in view of the direction of a plurality of optical photons from scintillator **34** to the photon incident surfaces of multiple arrays **22**, and comprising a fiber optic scintillator (column 6, lines 9-16) having a plurality of optical fibers bundled and disposed as recited (column 6, lines 16-18). All arrays **22** suggested in the radiation detector of Possin *et al.* would be in the "same" radiation detector.

With respect to independent claim 11, Possin *et al.* discloses a method for fabricating radiation detector corresponding to the illustrated detector **20** (Fig. **1**) which would comprise the steps of fabricating a first array **22** with a first photon incident surface. Those of ordinary skill in the art at the time the invention was made would know that photons do not fall under the influence of gravity in the way that is illustrated in Fig. **2** of Possin *et al.* Cusano shows (Fig. **1**) that in a radiation detector in which an array of scintillator bodies **10** is disposed such that x rays **50** are incident on the scintillator body **10** substantially perpendicular to the optical axis of the scintillator body (Fig. **6**) it is known to optically couple each scintillator body **10** to at least two sensor elements **18** such that sensor elements **18** are disposed at both ends of the plurality of scintillator bodies **10**. In view of the enhanced capture of the optical output of the scintillator bodies **10** when a detector **18** is provided at each end as specifically described by Cusano (column 4, lines 12-31), which enhanced capture would have been recognized as useful in the radiation detector of Possin *et al.* since some photons would travel upwards along axes **35** therein, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Possin *et al.* to fabricate a second array **22** with a second photon incident surface and position it optically coupled at the top end of the scintillator **34** fibers such that the scintillator separated the sensor elements. Hu *et al.* shows that an

offset of specifically one-half detector pitch (Fig. **3A**, column 3, lines 27-30) between two arrays **18A**, **18B** in a radiation detector is superior to a plurality of arrays with no offset (Fig. **4**, see also column 1 line 55 to column 2, line 9). In view of the reduced detector pitch without smaller detector elements as suggested by Hu *et al.*, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the radiation detector fabrication method of Possin *et al.* to position a first array **22** offset from a second array **22** by one-half the pitch of detectors **23**. Such an offset would be normal to the incident x ray direction such that the resolution in imaging object **28** was improved (which an offset parallel to the incident x ray direction would not achieve) and would be "with respect to" an axis of the scintillator array **34** in the method of Possin *et al.* All arrays **22** suggested in the method for fabricating the radiation detector of Possin *et al.* would be in the "same" radiation detector.

With respect to dependent claim 13, the positioning of the scintillator **34** in the radiation detector fabrication method of Possin *et al.* comprises the step of positioning a plurality of optical fibers (column 6, lines 9-16).

With respect to dependent claim 19, the positioning of the plurality of optical fibers in the radiation detector fabrication method of Possin *et al.* is as recited (column 6, lines 16-18).

With respect to dependent claim 14, the positioning of the scintillator **334** in the radiation detector fabrication method of Possin *et al.* (Fig. **3**) comprises the step of positioning a sheet of scintillator material (column 7, lines 22-31).

With respect to dependent claim 15, the positioning of the scintillator (array) in the radiation detector fabrication method of Possin *et al.* is as recited in view of the direction of a plurality of optical photons from scintillator **34** to the photon incident surfaces of multiple arrays **22** and in view of the additional arrays suggested by Cusano.

With respect to dependent claim 16, the fabrication of the arrays **22** in the radiation detector fabrication method of Possin *et al.* comprises the step of fabricating a plurality of photosensor devices **23**.

With respect to dependent claim 17, the fabrication of the photosensor devices **23** in the radiation detector fabrication method of Possin *et al.* is as recited in view of the nearly identical language of column 3, lines 1-5).

With respect to dependent claim 18, the fabrication of the photosensor devices **23** in the radiation detector fabrication method of Possin *et al.* is as recited in view of the nearly identical language of column 3, lines 5-9).

With respect to independent claim 20, Possin *et al.* discloses a method for fabricating a radiation detector corresponding to the illustrated detector **20** (Fig. **1**) which would comprise the steps of fabricating a first array **22** with a first photon incident surface including a plurality of sensor elements including a plurality of photosensor devices **23** (especially in view of the grouping illustrated in Fig. **7**). Those of ordinary skill in the art at the time the invention was made would know that photons do not fall under the influence of gravity in the way that is illustrated in Fig. **2** of Possin *et al.* Cusano shows (Fig. **1**) that in a method for fabricating a radiation detector in which an array of scintillator bodies **10** is disposed such that x rays **50** are incident on the scintillator body **10** substantially perpendicular to the optical axis of the scintillator body (Fig. **6**) it is known to optically couple each scintillator body **10** to at least two sensor elements **18** such that sensor elements **18** are disposed at both ends of the plurality of scintillator bodies **10**. In view of the enhanced capture of the optical output of the scintillator bodies **10** when a detector **18** is provided at each end as specifically described by Cusano (column 4, lines 12-31), which enhanced capture would have been recognized as useful in the detector of Possin *et al.* since some photons would travel upwards along

axes **35** therein, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the radiation detector fabrication method of Possin *et al.* to fabricate a second array **22** with a second photon incident surface and optically couple sensor elements **23** at the top end of the scintillator **34** fibers such that the scintillator separated the sensor elements. Hu *et al.* shows that an offset of specifically one-half detector pitch (Fig. **3A**, column 3, lines 27-30) between two arrays **18A**, **18B** in a radiation detector is superior to a plurality of arrays with no offset (Fig. **4**, see also column 1 line 55 to column 2, line 9). In view of the reduced detector pitch without smaller detector elements as suggested by Hu *et al.*, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the radiation detector fabrication method of Possin *et al.* to position a first array **22** offset from a second array **22** by one-half the pitch of detectors **23**. Such an offset would be normal to the incident x ray direction such that the resolution in imaging object **28** was improved (which an offset parallel to the incident x ray direction would not achieve) and would be "with respect to" an axis of the scintillator array **34** in the method of Possin *et al.* The method of Possin *et al.* further including a plurality of sensor elements including a plurality of photosensor devices **23** (especially in view of the grouping illustrated in Fig. **7**), and positioning a scintillator (array) **34** between the first photon incident surface and the second incident surface (as is apparent from the view since the extent of scintillator **34** encompasses multiple arrays **22**), configured as recited in view of the direction of a plurality of optical photons from scintillator **34** to the photon incident surfaces of multiple arrays **22**, and including a fiber optic scintillator (column 6, lines 9-16) having a plurality of optical fibers bundled and disposed as recited (column 6, lines 16-18). All arrays **22** suggested in the method for fabricating the radiation detector of Possin *et al.* would be in the "same" radiation detector.

Response to Submission(s)

5. Applicant's arguments filed January 9, 2006 have been fully considered but they are not persuasive.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

For at least the reasons explained above, Applicant is not entitled to a favorable determination of patentability in view of the arguments submitted January 9, 2006.

Conclusion

6. All claims are drawn to the same invention claimed in the application prior to the entry of the submission under 37 CFR 1.114 and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the application prior to entry under 37 CFR 1.114. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action after the filing of a request for continued examination and the submission under 37 CFR 1.114. See MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be

calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Constantine Hannaher whose telephone number is (571) 272-2437. The examiner can normally be reached on Monday-Friday with flexible hours.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David P. Porta can be reached on (571) 272-2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov/. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Constantine Hannaher
Primary Examiner